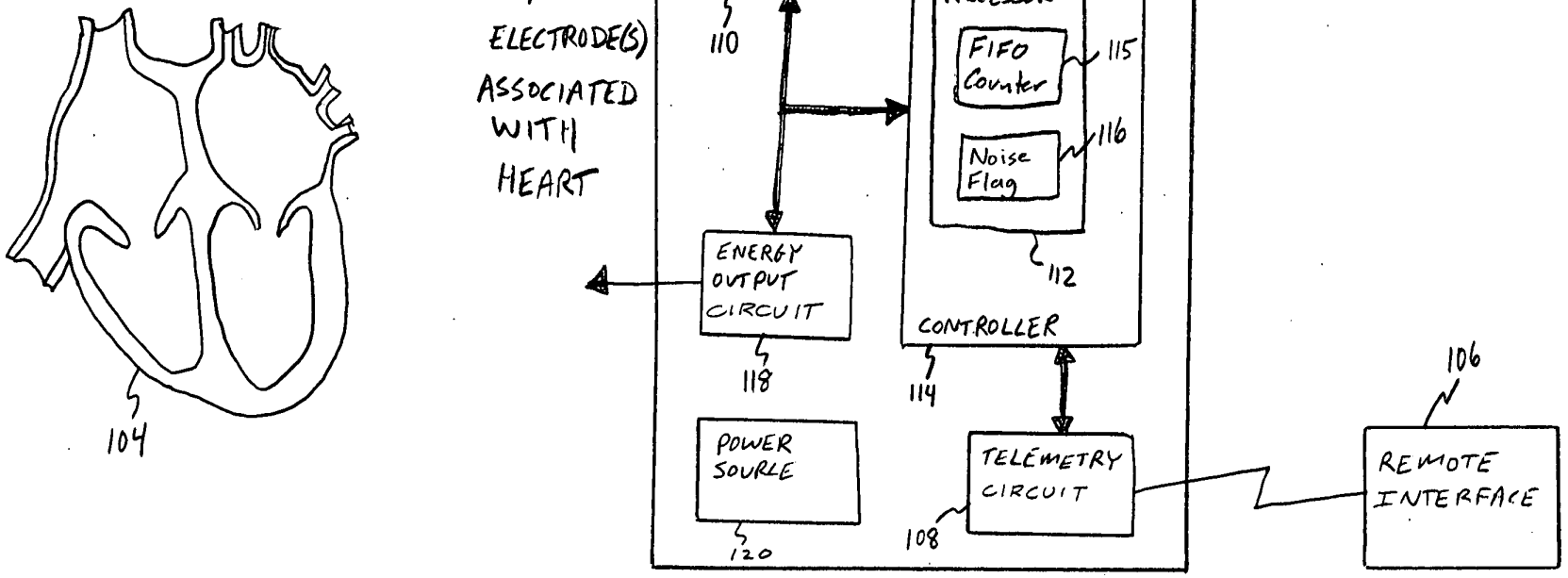
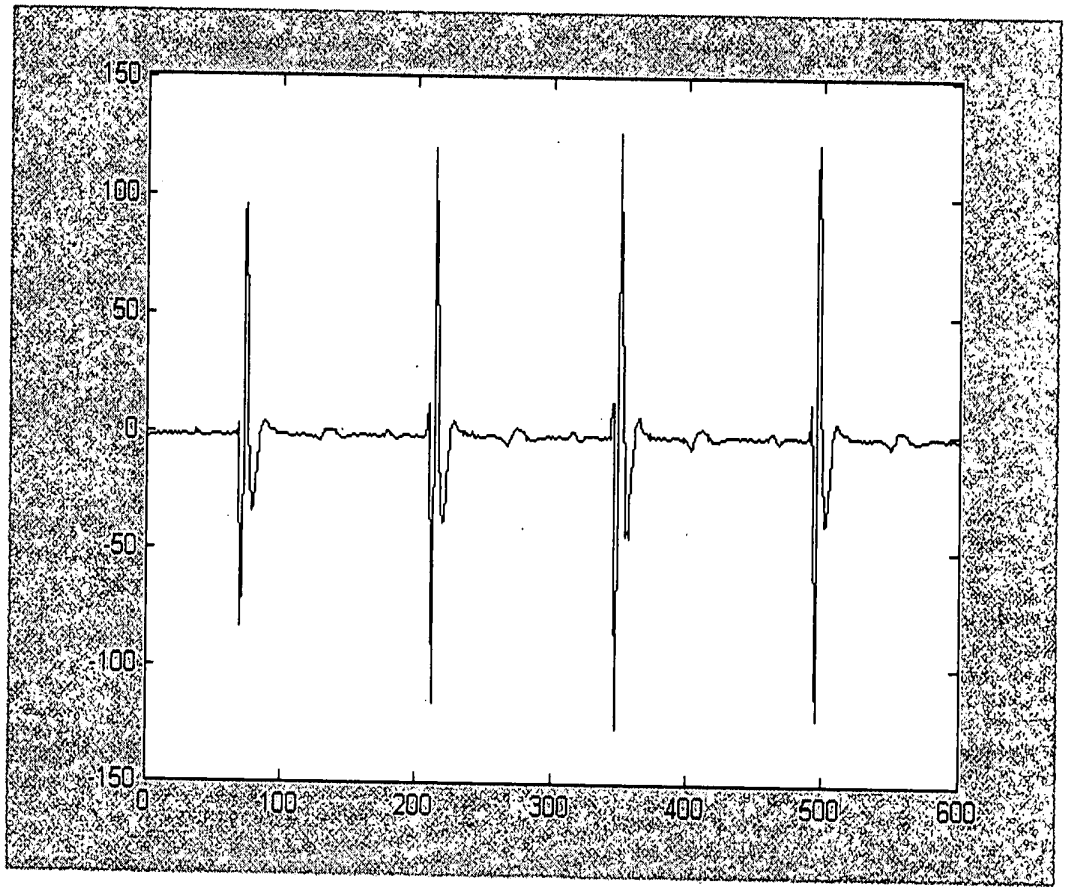

CARDIAC RHYTHM MANAGEMENT DEVICE
102
CARDIAC SIGNAL DETECTOR
110
CARDIAC SIGNAL PROCESSOR
FIFO Counter
115
Noise Flag
116
112
TO/FROM ELECTRODE(S) ASSOCIATED WITH HEART
ENERGY OUTPUT CIRCUIT
118
CONTROLLER
114
POWER SOURCE
120
TELEMETRY CIRCUIT
108
106
REMOTE INTERFACE
104
100

FIG. 1

I0620F 05994U0F

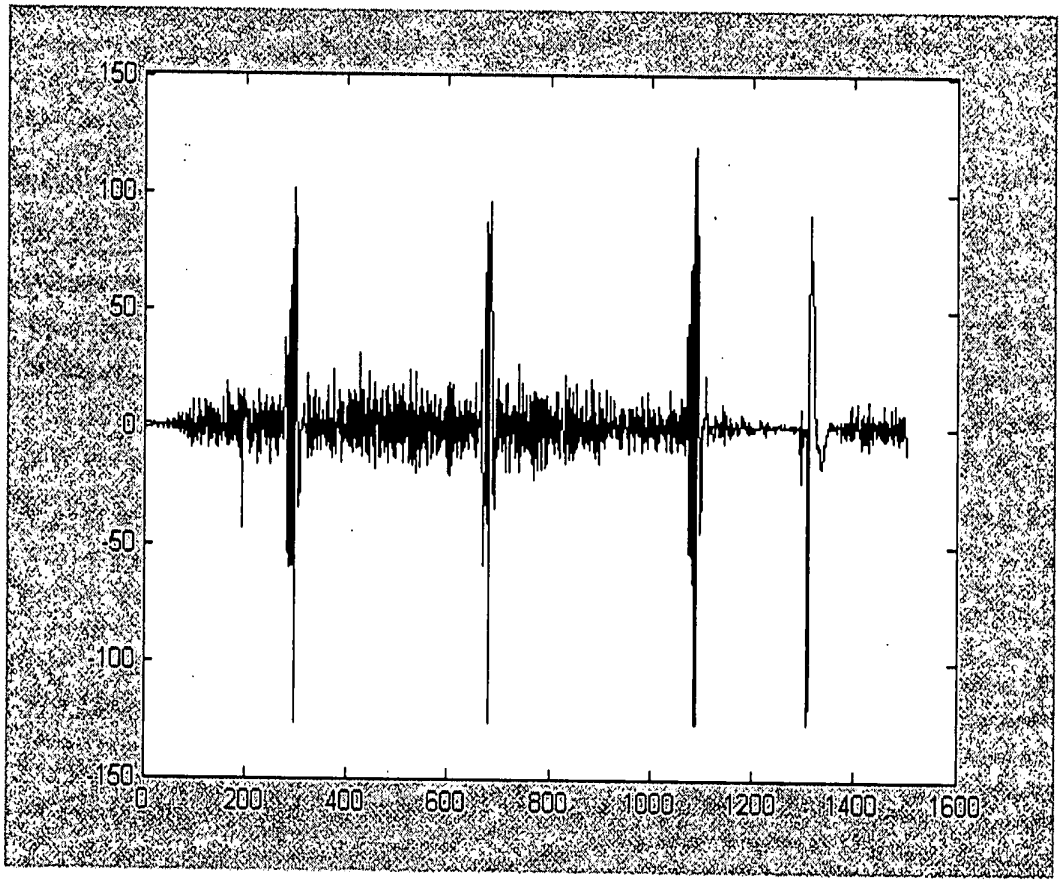
Clean electrocardiogram segment



200

FIG. 2

Noisy electrocardiogram segment



300

FIG. 3

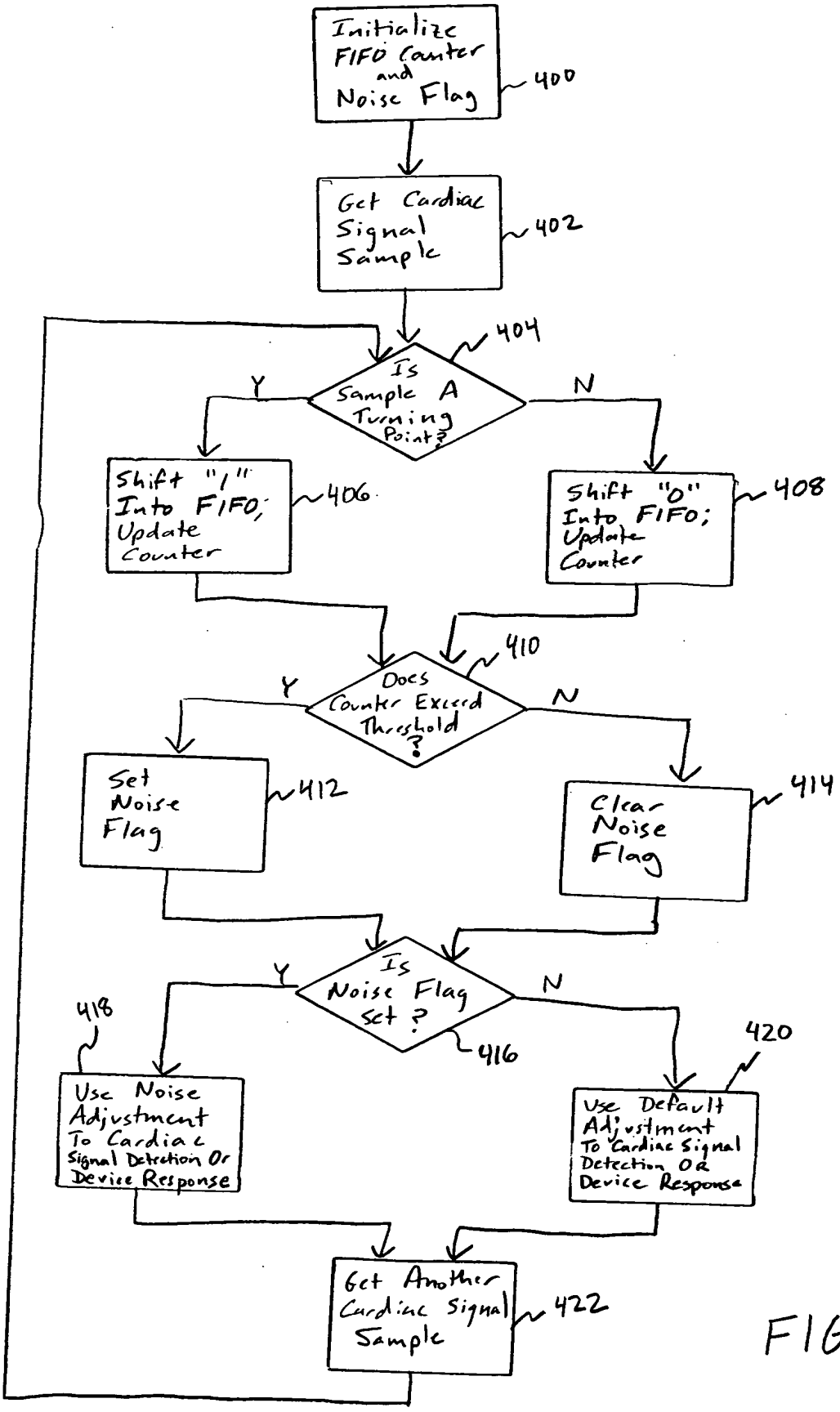

Initialize FIFO Counter and Noise Flag
400
Get Cardiac Signal Sample
402
Is Sample A Turning Point?
404
Y
N
Shift "1" Into FIFO; Update Counter
406
Shift "0" Into FIFO; Update Counter
408
Does Counter Exceed Threshold?
410
Y
N
Set Noise Flag
412
Clear Noise Flag
414
Is Noise Flag Set?
416
Y
N
Use Noise Adjustment To Cardiac Signal Detection Or Device Response
418
Use Default Adjustment To Cardiac Signal Detection Or Device Response
420
Get Another Cardiac Signal Sample
422

FIG. 4

TO620T"0599+00T

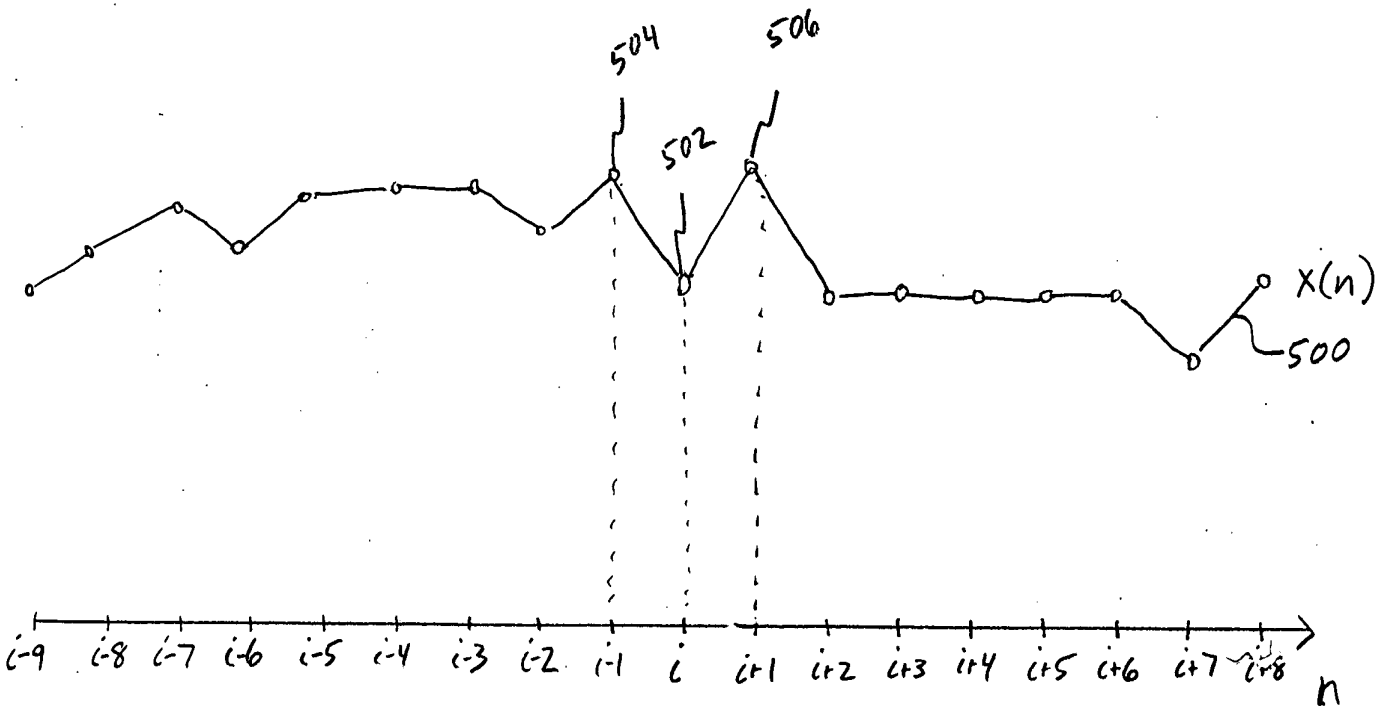


FIG. 5

FIG. 6

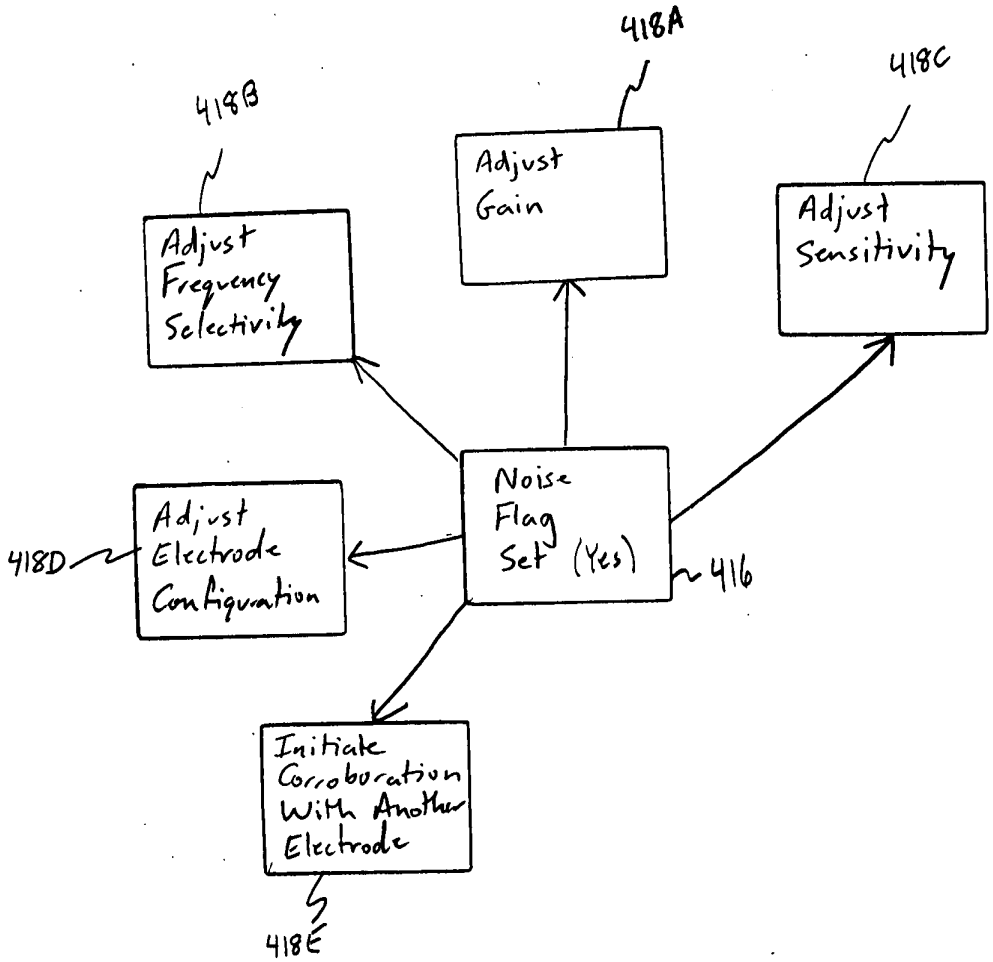
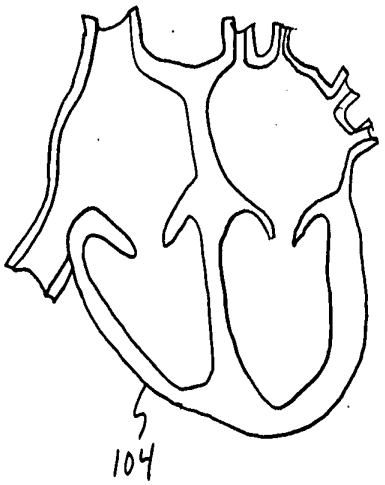

418A
418B
418C
Adjust Gain
Adjust Frequency Selectivity
Adjust Sensitivity
Noise Flag Set (Yes)
416
418D
Adjust Electrode Configuration
Initiate Corroboration With Another Electrode
418E

FIG. 7

T06201 0599:001



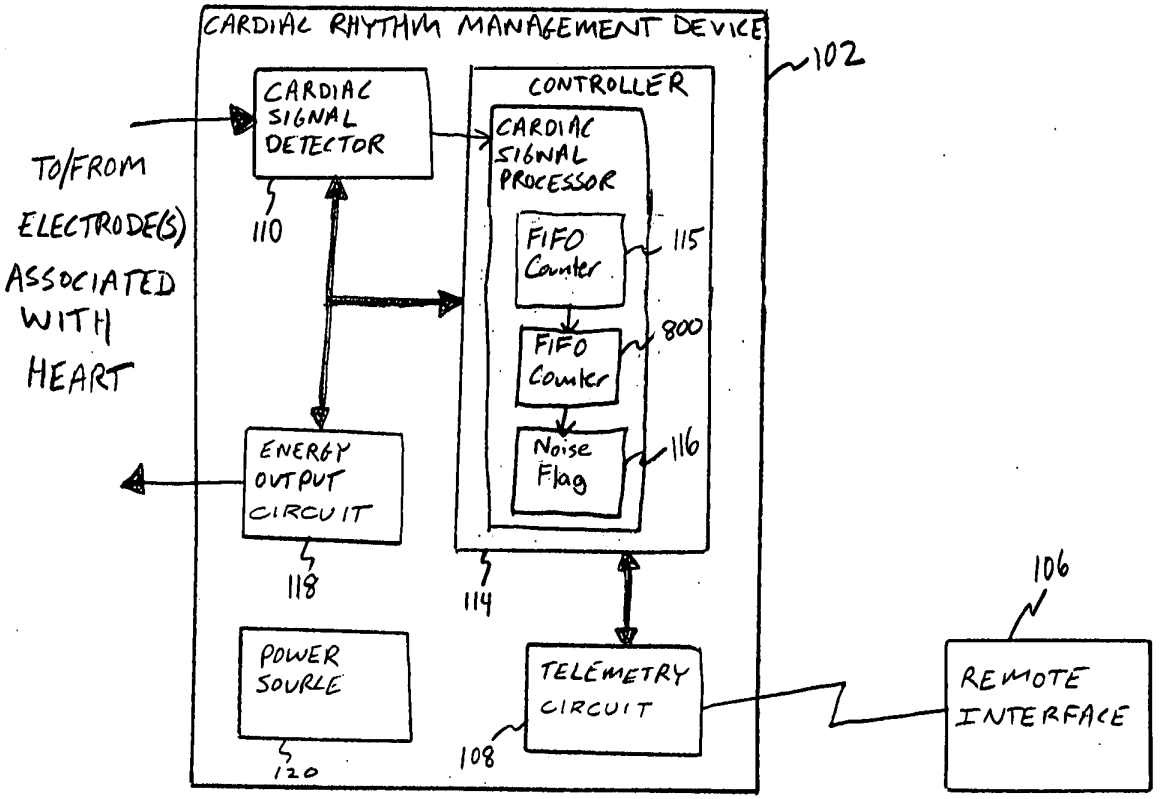


FIG. 8

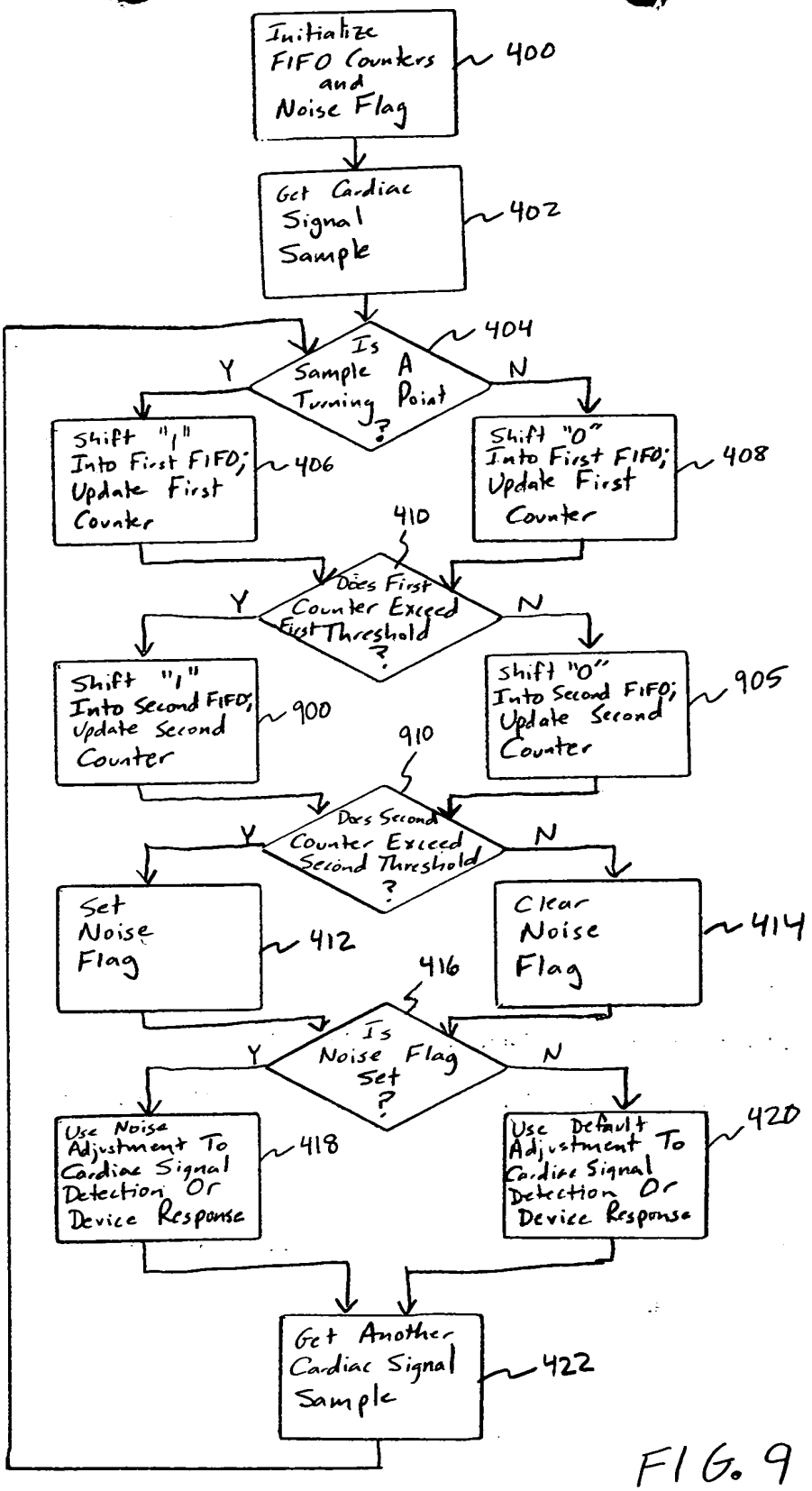

Initialize FIFO Counters and Noise Flag
400
Get Cardiac Signal Sample
402
Is Sample A Turning Point ?
404
Y
N
Shift "1" Into First FIFO; Update First Counter
406
Shift "0" Into First FIFO; Update First Counter
408
410
Does First Counter Exceed First Threshold ?
Y
N
Shift "1" Into Second FIFO; Update Second Counter
900
Shift "0" Into Second FIFO; Update Second Counter
905
910
Does Second Counter Exceed Second Threshold ?
Y
N
Set Noise Flag
412
Clear Noise Flag
414
416
Is Noise Flag Set ?
Y
N
Use Noise Adjustment To Cardiac Signal Detection Or Device Response
418
Use Default Adjustment To Cardiac Signal Detection Or Device Response
420
Get Another Cardiac Signal Sample
422

FIG. 9

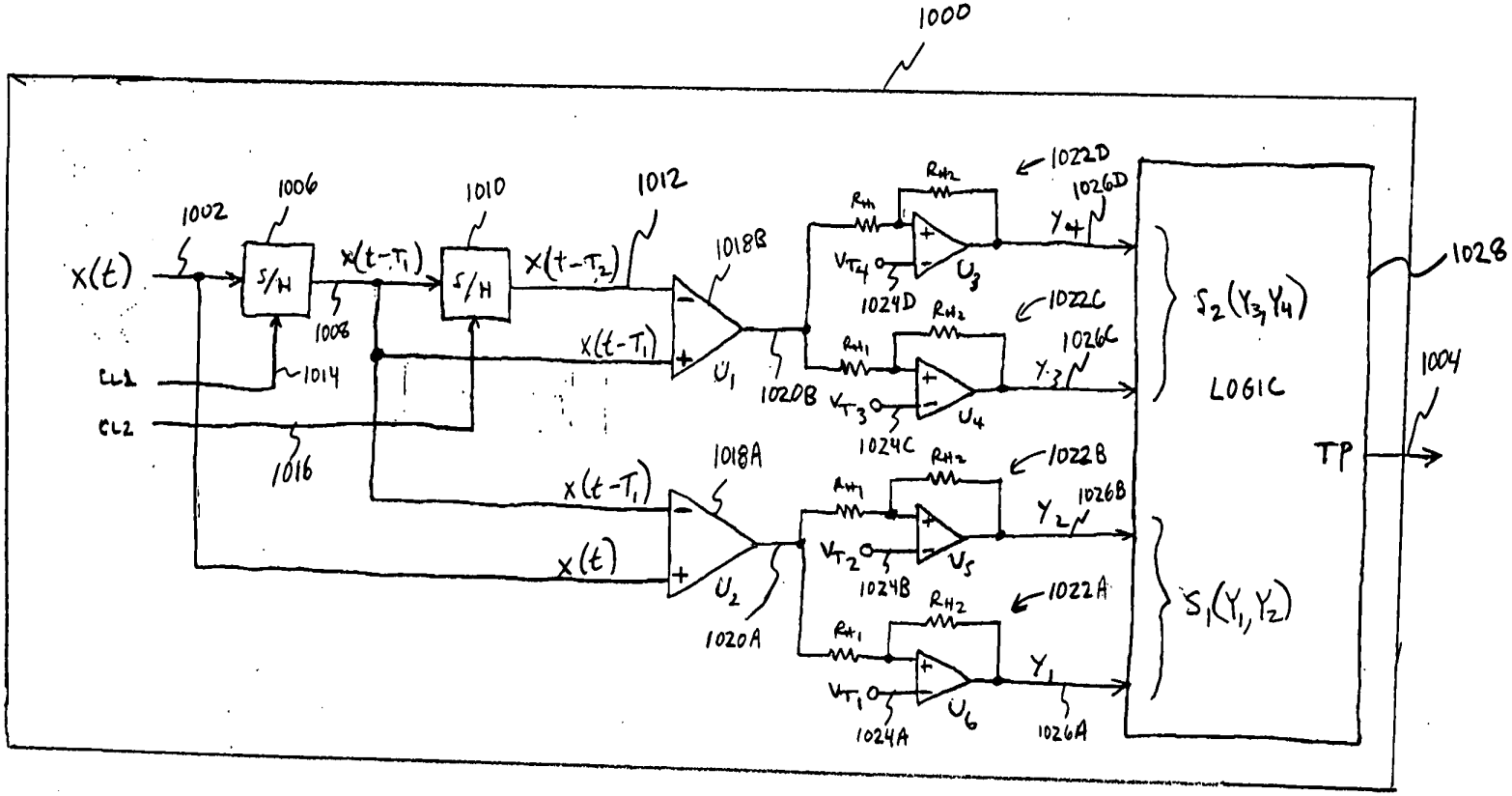

1000
1002
1006
1010
1012
x(t)
S/H
S/H
x(t-T1)
x(t-T2)
1008
1014
CL1
CL2
1016
1018B
1018A
U1
U2
1020B
1020A
x(t-T1)
x(t)
RH1
RH2
VT4
VT3
VT2
VT1
U3
U4
U5
U6
1024D
1024C
1024B
1024A
1022D
1022C
1022B
1022A
1026D
1026C
1026B
1026A
Y4
Y3
Y2
Y1
S2(Y3,Y4)
LOGIC
S1(Y1,Y2)
TP
1028
1004

FIG. 10

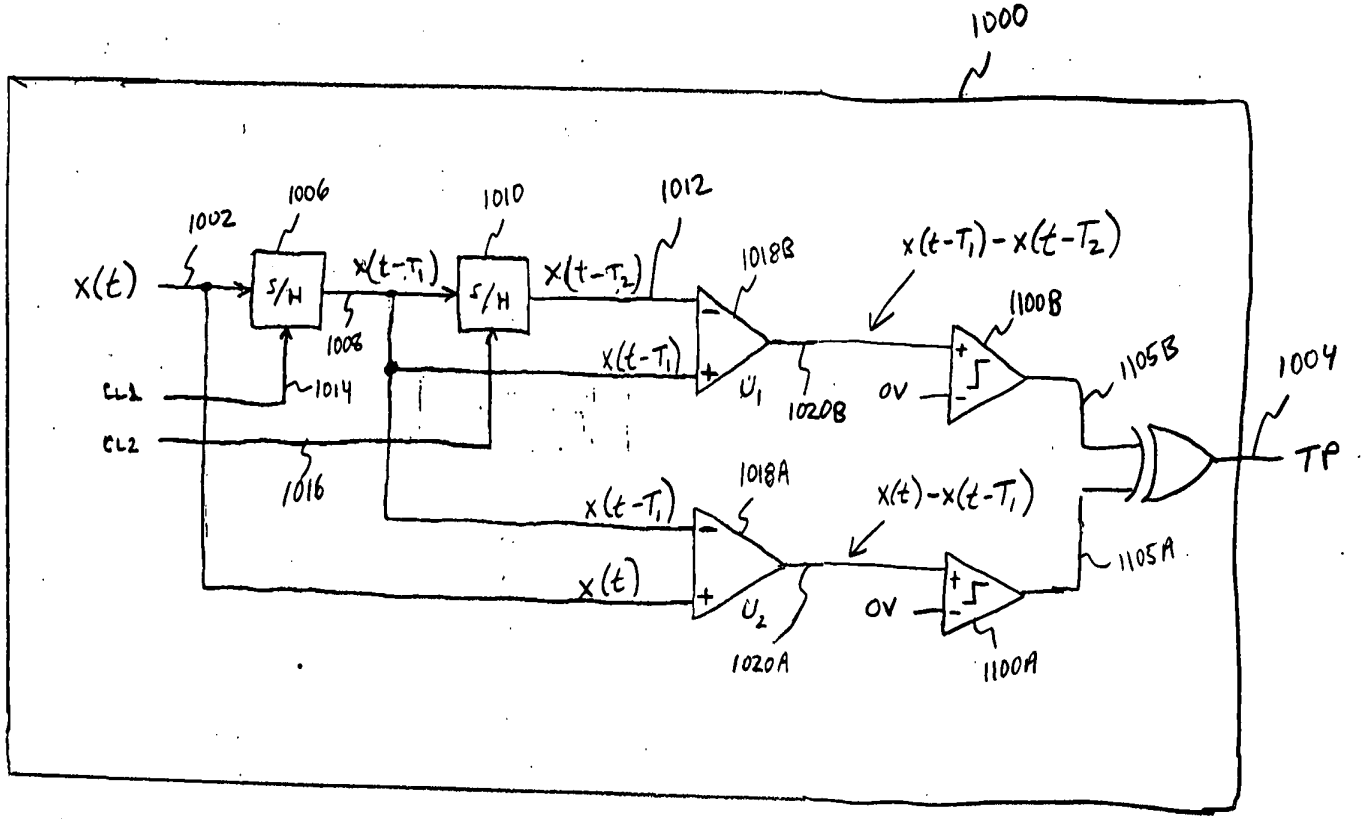

1000
1002
1006
1010
1012
x(t)
S/H
S/H
x(t-T1)
x(t-T2)
1008
1018B
x(t-T1)-x(t-T2)
1100B
x(t-T1)
U1
1020B
0V
1105B
1004
TP
CL1
CL2
1014
1016
1018A
x(t-T1)
x(t)-x(t-T1)
x(t)
U2
1020A
0V
1100A
1105A

FIG. 11